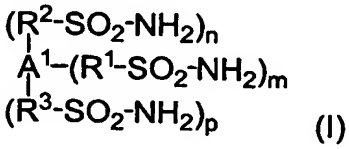
TITLE

FLUORINATED SULFONAMIDE COMPOUNDS AND POLYMER ELECTROLYTE MEMBRANES PREPARED THEREFROM FOR USE IN ELECTROCHEMICAL CELLS

ABSTRACT OF THE DISCLOSURE

A fluorinated sulfonamide small molecule having the general structure



(I)

wherein m, n and p are 0 to 3, with the proviso that m + n + p is equal to 1 to 4;

A^1 is an aromatic heterocyclic group, with the proviso that carbon atoms of the heterocyclic ring are fully substituted by fluorinated sulfonamide groups; and

R^1, R^2, and R^3 are linear or branched perfluoroalkylene groups, optionally containing oxygen, chlorine, bromine, or iodine atoms. Polymers and small molecules useful in making polymer electrode membranes, membrane electrode assemblies, and electrochemical cells, such as fuel cells, are also described.

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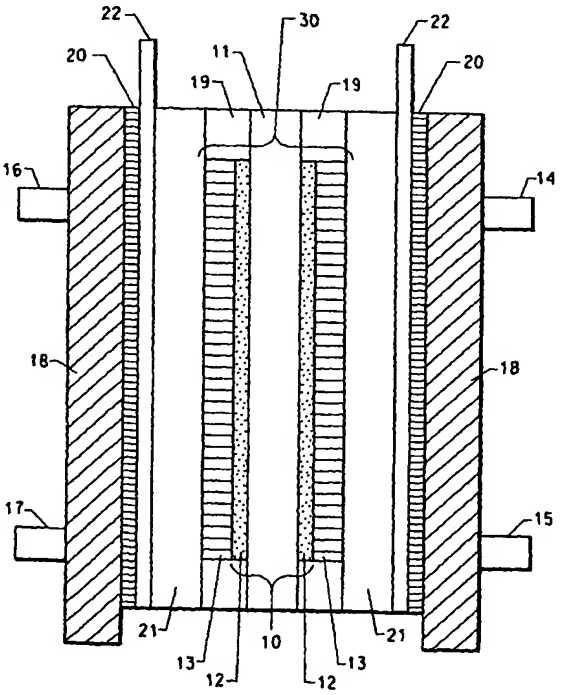

$$(R^2\text{-}SO_2\text{-}NH_2)_n$$
$$A^1\text{-}(R^1\text{-}SO_2\text{-}NH_2)_m$$
$$(R^3\text{-}SO_2\text{-}NH_2)_p \quad (I)$$

(57) Abstract: A fluorinated sulfonamide small molecule having the general structure (Formula I) wherein m, n and p are 0 to 3, with the proviso that m + n + p is equal to 1 to 4; A¿1? is an aromatic heterocyclic group, with the proviso that carbon atoms of the heterocyclic ring are fully substituted by fluorinated sulfonamide groups; and R¿1?, R¿2?, and R¿3? are linear or branched perfluoroalkylene groups, optionally containing oxygen, chlorine, bromine, or iodine atoms. Polymers and small molecules useful in making polymer electrode membranes, membrane electrode assemblies, and electrochemical cells, such as fuel cells, are also described.

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